ABSTRACT OF THE DISCLOSURE

A vertical cavity laser array device including a substrate, top and bottom dielectric stacks, and an active region for producing laser light. The active region includes one or more periodic gain region(s) and spacer layers disposed on either side of the periodic gain region(s) and arranged so that the periodic gain region(s) is aligned with the antinodes of the device's standing wave electromagnetic field. A structure is provided for modulating the properties of the periodic gain region(s) at spaced locations so as to provide an array of spaced laser pixels which have higher net gain than the interpixel regions; and the spaced laser pixels having the same or different sizes and the spacings between pixels having the same or different lengths to cause the output of the vertical cavity laser array device to produce single or multimode laser output.